

with constant curvature.—Emile **Jouguet**: The propagation of deflagrations and the limits of inflammability.—Henri **Chrétien**: A variant of the method of coincidences. In the comparison of two chronometers a curious stereo-acoustic phenomenon was observed by means of which the coincidences of the beats could be accurately observed.—A. **Tian**: A new mode of construction of quartz-mercury vapour lamps. A description of a simple form of mercury lamp, easily constructed in the laboratory out of a small transparent quartz test-tube.—Maurice **Billy**: A simple method for determining the density of mineral powders. The adsorbed air on the particles of powder is replaced by carbon dioxide by evacuating and admitting carbon dioxide to the flask containing the weighed powder. A dilute solution of an alkali of known density replaces the water in the density determination. Any carbon dioxide clinging to the powder is dissolved by the solution. Comparative measurements of the density of a solid before and after powdering showed that the accuracy was of the order of 1 in 3000, or about ten times that of the usual method.—Louis **Dunoyer**: A remarkable case of optical resonance. A description of a resonance phenomenon observed in sodium vapour.—L. **Gay**: The adiabatic expansion of liquids. An account of an experimental method for determining the expansion produced in liquids by adiabatic expansion from 2 to 1 atmosphere.—G. **Wyrouboff**: Some observations concerning the note of Mlle. Feytis on the magnetism of anhydrous and hydrated salts. The author regards a hydrated and dry salt as possessing quite different constitutions, and regards the measurements of Mlle. Feytis as confirming these views.—M. Emm. **Pozzi-Escot**: A new double sulphate of silver and cerium. The new salt has the composition $10\text{Ce}(\text{SO}_4)_2 \cdot 6\text{Ag}_2\text{SO}_4$.—A. **Colani**: The solubility of thorium oxalate. Data are given for the solubilities in hydrochloric and oxalic acids.—Paul **Lebeau** and Marius **Picon**: The action of monosodium acetylene upon the alcoholic iodides. The preparation of true acetylenic hydrocarbons. The sodium derivative of acetylene is prepared by the action of acetylene upon sodammonium in solution in liquid ammonia at -50°C . The alkyl iodide is added to this solution and a quantitative yield of the alkylacetylene is obtained. Details of the preparation of allylene and hexine by this method are given.—F. **Bodroux**: Catalytic ester formation in dilute solution; the preparation of ethyl acetate. In presence of a suitable catalyst ethyl acetate is formed from alcohol, and acetic acid in dilute solutions of sulphuric acid.—E. C. **Teodoresco**: The action of high temperatures on dried nucleases of plant origin. The dried nucleases of the three plants studied do not lose all their activity towards sodium nucleate until after thirty minutes' heating to temperatures varying between 141°C . and 162°C .—Maurice **Lenoir**: The commencement of vascular differentiation in the plantule of *Veronica*.—Marcel **Dubard** and J. A. **Urbain**: The influence of the albumen on the development of the embryo. The albumen is not indispensable to development, but its influence is favourable, especially during the first days of germination.—L. **Armand**: The kinetic phenomena of the heterotypical prophase in *Lobelia erinus*.—M. **Marage**: The inscription of the respiratory movements by means of the hand.—Edgard **Hérouard**: The relations between the depression and formation of the tentacular pseudoplanula in the Scyphistome.—A. **Quidor**: *Lamareckina caligusa* and the evolution of the Lernæidæ.—F. **Picard**: Parthenogenesis in *Phthorimæa operculella*.—Lucien **Cavel**: Sulphur and its variations in the biological treatment of sewage. The determination of combined sulphur in sewage which has passed through various stages of purification throws some light on the

proportion of unattacked albumen. The combined sulphur in a sewage effluent should be very small, if the purification has been properly carried out.—M. **Mazé**: The alcoholic fermentation of lactic acid. The organism employed caused the destruction of nearly all the lactic acid present; alcohol and formic acid are the primary products, but the alcohol is acted on and acetic acid formed.—Em. **Bourquelot** and M. **Bridel**: The synthesis of galactosides of alcohols by means of emulsin; β -methylgalactoside and β -allylgalactoside. A description of the preparation and properties of these two galactosides, the latter being new.—Henri **Dominici**, Mme. Simone **Laborde**, and Albert **Laborde**: Study on the injection of radium salts. Radium salts are eliminated from the system with extreme slowness.—Jacques **Deprat**: The succession of the Permian and Carboniferous strata in Indo-China. — Edmond **Bordage**: Researches relating to the extension of the nummulitic sea on the right bank of the Gironde.—A. **Leclère**: The genesis of sedimentary iron minerals.

BOOKS RECEIVED.

Anthropological Report on the Ibo-speaking Peoples of Nigeria. By N. W. Thomas. Part i., Law and Custom of the Ibo of the Awka Neighbourhood, S. Nigeria. Pp. 161+xix plates. Part ii., English-Ibo and Ibo-English Dictionary. Pp. vii+391. Part iii., Proverbs, Narratives, Vocabularies, and Grammar. Pp. vi+199. (London: Harrison and Sons.)

The Distinction between Mind and its Objects. By Dr. B. Bosanquet. Pp. 73. (Manchester University Press.) 1s. net.

Memoirs of the Geological Survey, Scotland. The Geology of Upper Strathspey, Gaick, and the Forest of Atholl (Explanation of Sheet 64). By G. Barrow, L. W. Hinxman, and E. H. C. Craig. With contributions by H. Kynaston. Pp. vi+116+iv plates. (London: H.M.S.O.; E. Stanford, Ltd.) 2s.; map, 2s. 6d.

Memoirs of the Geological Survey, England and Wales. (Explanation of Sheet 349.) The Geology of the Country around Ivybridge and Modbury. By W. A. G. Ussher. With a chapter on Altered Rocks by G. Barrow. Pp. vi+137+vi plates. (London: H.M.S.O.; E. Stanford, Ltd.) 3s.; map, 1s. 6d.

Tropical Diseases Research Fund. Report of the Advisory Committee for the Tropical Diseases Research Fund for the Year 1912. Pp. 198. (H.M.S.O.; Wyman and Sons, Ltd.)

Verhandlungen der K.K. Geologischen Reichsanstalt. Jahrgang 1912. No. 1 bis 18. (Vienna: R. Lechner.)

Neue Denkschriften der Schweizerischen Naturforschenden Gesellschaft. Band xlvii. Pp. v+309+plates. (Zurich: Zürcher and Furrer.)

Forty-fourth Annual Report of the American Museum of Natural History for the Year 1912. Pp. 208+plates. (New York.)

"Red Books" of the British Fire Prevention Committee. No. 173, Fire Tests with Doors. Reinforced-Concrete Doors. Pp. 28. (London: The British Fire Prevention Committee, 8 Waterloo Place.) 3s. 6d.

Commercial Gardening. Edited by J. Weathers. In 4 vols. Vol. i., pp. xii+239. Vol. ii., pp. xii+235; vol. iii., pp. xii+240; vol. iv., pp. xii+244. (London: The Gresham Publishing Company.) Four vols., 36s. net.

Allen's Commercial Organic Analysis. Edited by W. A. Davis and S. S. Sadtler. Vol. iii. Fourth edition. By the Editors, E. F. Armstrong, G. C. Jones, A. E. Taylor, G. Barger, and others. Pp. xi+563. (London: J. and A. Churchill.) 21s. net.

Mitteilungen der Naturforschenden Gesellschaft in

Bern aus dem Jahr 1912. Pp. xlv+349+3 plates. (Bern: K. J. Wyss.)

Ministère de l'Agriculture. Direction Générale des Eaux et Forêts. 2^e Partie. Eaux et Améliorations Agricoles. Service des Grandes Forces Hydrauliques dans la Région des Alpes. Tome v. Résultats des Etudes et Travaux à la Fin de 1911. Pp. 530. (Publisher's name not given.)

A Course of Elementary Workshop Drawing. By H. A. Darling. Pp. vi+172. (London: Blackie and Son, Ltd.) 1s. 6d.

The Origin and Antiquity of Man. By Dr. G. F. Wright. Pp. xx+547. (London: J. Murray.) 8s. net.

The Important Timber Trees of the United States. By S. B. Elliott. Pp. xix+382. (London: Constable and Co., Ltd.) 10s. 6d. net.

The Potato. By E. H. Grubb and W. S. Guilford. Pp. 545. (London: Constable and Co., Ltd.) 8s. 6d. net.

Handbuch der Arbeitsmethoden in der anorganischen Chemie. By Dr. A. Stähler. Erster Band. Pp. xii+786. (Leipzig: Veit and Co.) 25 marks.

Annales de l'Observatoire National d'Athènes. By Prof. D. Eginitis. Tome vi. Pp. 333+plates. (Athens: A. Raftanis.)

Abel's Laboratory Handbook of Bacteriology. Second English Edition. By Dr. M. H. Gordon and others. Pp. xi+251. (London: H. Frowde and Hodder and Stoughton.) 5s. net.

Missouri Botanical Garden. Twenty-third Annual Report. Pp. 207+7 plates. (St. Louis, Mo.: The Board of Trustees.)

L'Uomo Attuale una Specie Collettiva. By V. Giuffrida-Ruggeri. Pp. viii+192+ix plates. (Milan: Albrighi, Segati e C.) 6 lire.

Mitteilungen aus den deutschen Schutzgebieten. Edited by Dr. H. Marquardsen. Ergänzungsheft, Nr. 6, Ergebnisse einer Reise durch das Zwischenseengebiet Ostafrikas 1911. By H. Meyer. Pp. iii+127+ix plates. (Berlin: E. Siegfried Mittler und Sohn.) 3.60 marks.

Die antike Tierwelt. By O. Keller. Zweiter Band. Pp. xv+618+2 plates. (Leipzig: W. Engelmann.) 17 marks.

The Continents and Their People. Asia: a Supplementary Geography. By J. F. and A. H. Chamberlain. Pp. vi+198. (London: Macmillan and Co., Ltd.) 3s.

DIARY OF SOCIETIES.

THURSDAY, APRIL 17.

ROYAL SOCIETY, at 4.30.—The Luminosity Curves of Persons having Normal and Abnormal Colour Vision: Dr. W. Watson.—The Reflection of X-Rays by Crystals: Prof. W. H. Bragg and W. L. Bragg.—A Fluorescence Spectrum of Iodine Vapour: Prof. J. C. McLennan.—The Relation between the Crystal-symmetry of the Simpler Organic Compounds and their Molecular Constitution. I.: Dr. W. Wahl.

ROYAL INSTITUTION, at 8.—The Progress of Hittite Studies. I. Recent Explorations: Prof. J. Garstang.

INSTITUTION OF MINING AND METALLURGY, at 8.—Notes on Some Bulgarian Mineral Deposits: H. K. Scott.—Notes on the San Francisco Mill, Pachuca, Mexico: J. P. Holcombe.—Errors in Sampling and Assaying Ores due to the Presence of Coarse Gold: F. White.

ROYAL SOCIETY OF ARTS, at 4.30.—The Burma Oil Fields: N. G. Cholmeley. LINNEAN SOCIETY, at 8.—An Account of the Plants Collected by Mr. M. P. Price on the Caruthers-Miller-Price Expedition through North-west Mongolia and Chinese Dzungaria: M. P. Price and N. D. Simpson.—The Flora of the Island of Shikotan: Hisayoshi Takeda.

FRIDAY, APRIL 18.

ROYAL INSTITUTION, at 9.—Applications of Polarised Light: Dr. T. M. Lowry.

INSTITUTION OF MECHANICAL ENGINEERS, at 8.—Presidential Address.—Discussion: Volute Chambers and Guide-passages for Centrifugal Pumps: Prof. Gibson.

MONDAY, APRIL 21.

ROYAL SOCIETY OF ARTS, at 8.—Antiseptics and Disinfectants. I.: Dr. D. Somerville.

VICTORIA INSTITUTE, at 4.30.—The Samaritan Pentateuch, and Philological Questions connected therewith: Rev. J. I. Munro.

INSTITUTION OF CIVIL ENGINEERS, at 8.—Production of Steel Sections and their Application in Engineering Structures: A. T. Walmisley.

NO. 2268, VOL. 91]

TUESDAY, APRIL 22.

ROYAL INSTITUTION, at 3.—The Heredity of Sex and Some Cognate Problems. II.: Prof. W. Bateson.

ROYAL ANTHROPOLOGICAL INSTITUTE, at 8.15.—The Weeping God. T. A. Joyce.—Prehistoric and Other Antiquities in the Departments of Vienne and Charente, France: A. L. Lewis.

INSTITUTION OF CIVIL ENGINEERS, at 8.—Assuan Dam: Protection of Down-stream Rock Surface, and Thickening and Heightening: M. Macdonald.

ZOOLOGICAL SOCIETY, at 8.30.—The Polyzoa of Waterworks: Dr. S. F. Harmer.—The Marine Fauna of British East Africa and Zanzibar, from Collections made by Cyril Crossland, in the Years 1901-2. Bryozoa—Cheilostomata: A. W. Waters.—Notes on Albinism in the Common Reedbuck (*Cervicapra arundinum*), and on the Habits and Geographical Distribution of Sharpe's Steenbuck (*Raphicerus sharpei*): Major J. Stevenson-Hamilton.

WEDNESDAY, APRIL 23.

ROYAL SOCIETY OF ARTS, at 8.—The Design and Architectural Treatment of Shops: H. V. Lanchester.

GEOLOGICAL SOCIETY, at 8.—The Fossil Flora of the Pembrokeshire Portion of the South Wales Coalfield: H. Goode.—The Halesowen Sandstone Series of the Southern End of the South Staffordshire Coalfield: H. Kay.

AERONAUTICAL SOCIETY, at 8.30.—Aeroplane Construction: A. R. Low.

THURSDAY, APRIL 24.

ROYAL SOCIETY, at 4.30.—*Probable Papers*: (1) Protostigmata in Ascidians; (2) The Origin of the Ascidian Mouth: A. G. Huntsman.—Experiments on the Kidneys of the Frog: F. A. Bainbridge, S. H. Collins, and J. A. Menzies.—(1) The Probable Value to *B. coli* of "Slime" Formation in Soils; (2) Variation in *B. coli*. The Production of Two Permanent Varieties from One Original Strain by Means of Brilliant Green: Cecil Revis.

ROYAL INSTITUTION, at 3.—The Progress of Hittite Studies. II. Religious Monuments of Asia Minor: Prof. J. Garstang.

SOCIETY OF DYERS AND COLOURISTS (London Section), at 8.—The Chemistry of the Vat Dyes: E. de B. Barnett.

INSTITUTION OF ELECTRICAL ENGINEERS, at 8.—Phase Advancing: Dr. G. Kapp.

CONCRETE INSTITUTE, at 7.30.—Discussion on Reports of the Science Standing Committee on: (1) A Standard Notation for Structural Engineering Calculations; (2) A Standard Specification for Reinforced Concrete Work; (3) Standard Connections and Joints in Reinforced Concrete.

CONTENTS.

	PAGE
A Text-book of Human Physiology	157
Typical Ammonites	157
Topography and Travel	158
Our Bookshelf	159
Letters to the Editor:—	
Soil Fertility.—F. Fletcher; Dr. E. J. Russell . .	160
Induced Cell-reproduction in the Protozoa.—Aubrey H. Drew	160
Units of Pressure in Vacuum Work.—W. H. Keesom . .	161
Reflection of X-Rays and X-Ray Fringes. (<i>With Diagram</i>).—M. de Broglie	161
Increase of Definition in a Moving Telescope.—M. E. J. Gheury	162
The Ninth International Congress of Zoology at Monaco	162
The International Congress of Historical Studies . .	165
Public Veterinary Services	166
Notes	166
Our Astronomical Column:—	
The Question of Radium in the Chromosphere . . .	171
Dedication of the New Allegheny Observatory . . .	171
General Index to the Memoirs of the Society of Italian Spectroscopists	171
National Aspects of Education. By Prof. R. A. Gregory	171
Variations in Atmospheric Circulation in Temperate Latitudes. By E. Gold	174
Gyrostats and Gyrostatic Action. (<i>Illustrated</i>). By Prof. Andrew Gray, F.R.S.	175
University and Educational Intelligence	179
Societies and Academies	180
Books Received	181
Diary of Societies	182

Editorial and Publishing Offices:

MACMILLAN & CO., LTD.,
ST. MARTIN'S STREET, LONDON, W.C.

Advertisements and business letters to be addressed to the Publishers.

Editorial Communications to the Editor.

Telegraphic Address: PHUSIS, LONDON.

Telephone Number: GERRARD 8830.